UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/814,215	TSAI ET AL.
	Examiner	**Art Unit**	
	Christopher Findley	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   **Claims 9-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

Independent claim 9 recites "A machine-readable storage medium storing a computer program which, when executed, directs a computer to perform a method of object tracking path generation, comprising the steps of..." which fails to meet the statutory requirement set forth in the <u>Interim Guidelines, Annex IV (a) and (b)</u>:

(a) Functional Descriptive Material: "Data Structures" Representing Descriptive Material Per Se or Computer Programs Representing Computer Listings Per Se

Data structures <u>not claimed as embodied in computer-readable media</u> are descriptive material per se and <u>are not statutory</u> because they are not capable of causing functional change in the computer.

The program has to be embodied in a "computer *readable* medium." Claim 9 fails to recite this aspect.

(b) Nonfunctional Descriptive Material

Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C. § 101. Certain types of descriptive material, such as music, literature, art, photographs and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture or composition of matter.

The computer program as claimed is not properly associated with the operation. It is possible that the computer program as claimed may be an unrelated sub-routine or a simple "commence" instruction, which then causes the computer to execute the operation that could be self-resident, and not encoded on the medium. The computer program stored on the computer readable medium must include the steps directed to performing the tracking operations. The Examiner suggests that the computer program be more directly associated with the operation.

Claims 10-16 are dependent upon claim 9. Corrections to the claims are required.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-4, 9-12, 17-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (US 5999651 A).

Re claim 1, Chang discloses a system for object tracking path generation, comprising: a digital media player having a player interface for playing a digital media file having a plurality of frames (Chang: column 2, lines 5-7); and a tracking path processing unit (Chang: Abstract section, a computer-implemented apparatus for tracking an image object within successive first and second image frames), comprising: a position definition module to define position data of an object in at least a first frame and a second frame of the frames via the player interface when the digital media player plays the digital media file (Chang: column 2, lines 63-66); and a path recording/generation module to record the position data defined by the position definition module (Chang: column 2, lines 5-11; column 6, lines 50-52, vectors with the highest probable correlation are stored), and time data of the first and second frames (Chang: column 4, lines 17-23), and generate an object tracking path of the object in the digital media file according to the position and time data (Chang: column 4, lines 11-16, the global motion component is integrated into the four part motion estimation operation).

Re claim 2, Chang discloses that the tracking path processing unit further comprises a frame interval definition module to define a frame number between the predetermined first and second frames (Chang: column 4, lines 30-32).

Re claim 3, Chang discloses that the tracking path processing unit further comprises a shape determination module to determine shape data of the object in the predetermined first and second frames (Chang: column 2, lines 12-28; Figs. 2a and 2b).

Re claim 4, Chang discloses that the path recording/generation module further records the shape data and integrates it to the object tracking path (Chang: column 2, lines 12-28, contour and motion information are integrated).

Claim 9 recites the corresponding computer readable medium stored thereon a computer program for controlling the object tracking operations of claim 1, and, therefore, claim 9 has been analyzed and rejected with respect to claim 1 above.

Claim 10 has been analyzed and rejected with respect to claim 2 above.

Claim 11 has been analyzed and rejected with respect to claim 3 above.

Claim 12 has been analyzed and rejected with respect to claim 4 above.

Claim 17 recites the corresponding method for performing the object tracking operations of claim 1, and, therefore, claim 17 has been analyzed and rejected with respect to claim 1 above.

Claim 18 has been analyzed and rejected with respect to claim 3 above.

Re claim 20, Chang discloses transforming the object tracking path to a specific format according to the position, time and shape data (Chang: column 2, lines 24-28, the contour is adjusted to conform with predefined smoothness constraints).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   **Claims 5-7, 13-15, and 19 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Chang et al. (US 5999651 A) in view of Rui et al. (US 6999599

B2).

Re claim 5, Chang discloses a majority of the features of claim 5, as discussed

above in claim 1, but Chang does not specifically disclose that the digital media player

further simultaneously plays the digital media file and the object tracking path in the

player interface according to the time and position data. However, Rui discloses a

system for mode-based multi-hypothesis tracking using parametric contours, wherein

the video frame is displayed with an object outline overlaid on the display image (Rui:

Figs. 4A-4F and 5A-5C; Fig. 2, output module 270; column 12, lines 48-57). Since both

Chang and Rui relate to tracking objects in a sequence of frames, one of ordinary skill in

the art at the time of the invention would have found it obvious to combine the tracking

display of Rui with the deformable object tracking of Chang in order to provide a

tracking system that is both robust in complex environments and computationally

efficient (Rui: column 2, lines 41-53). The combined system of Chang and Rui has all of

the features of claim 5.

Re claim 6, the combined system of Chang and Rui discloses a majority of the features of claim 6, as discussed above in claim 5. Chang does not specifically disclose that the tracking path processing unit further comprises a path adjustment module to adjust the object tracking path when the digital media file and the object tracking path are simultaneously played in the player interface. However, Rui discloses that the tracking contour is adjusted according to the activity from frame to frame (Rui: Figs. 4A-4F). Since both Chang and Rui relate to tracking objects in a sequence of frames, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the tracking display of Rui with the deformable object tracking of Chang in order to provide a tracking system that is both robust in complex environments and computationally efficient (Rui: column 2, lines 41-53). The combined system of Chang and Rui has all of the features of claim 6.

Re claim 7, the combined system of Chang and Rui discloses a majority of the features of claim 7, as discussed above in claims 5 and 6 above. Additionally, Chang discloses that the tracking path processing unit further comprises a transformation module to transform the object tracking path to a specific format according to the position and time data (Chang: column 2, lines 24-28, the contour is adjusted to conform with predefined smoothness constraints).

Claim 13 has been analyzed and rejected with respect to claim 5 above.

Claim 14 has been analyzed and rejected with respect to claim 6 above.

Claim 15 has been analyzed and rejected with respect to claim 7 above.

Claim 19 has been analyzed and rejected with respect to claim 6 above.

5.   **Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US 5999651 A) in view of Daras et al., "MPEG-4 Authoring Tool Using Moving Object Segmentation and Tracking in Video Shots," EURASIP Journal on Applied Signal Processing, pages 861-877, September 2003.**

Re claim 8, Chang discloses a majority of the features of claim 8, as discussed above in claim 1, but Chang does not specifically disclose that the specific format comprises binary format for scene (BIFS). However, Daras discloses an MPEG-4 authoring tool using moving object segmentation and tracking in video shots, wherein image sequences integrated with MPEG-4 BIFS scene description features (Daras: Section 4) is segmented (Daras: Section 3.1) and the segmented objects are tracked (Daras: Section 3.4). Since both Chang and Daras relate to tracking objects in a sequence of frames, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the MPEG-4 BIFS scene description features of Daras with the deformable object tracking of Chang in order to provide a system , which fully exploits the object-based coding and 3D synthetic functionalities of the MPEG-4 standard (Daras: Section 1). The combined system of Chang and Daras has all of the features of claim 8.

Claim 16 has been analyzed and rejected with respect to claim 8 above.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure:

    a.   Method for segmenting a video image into elementary objects

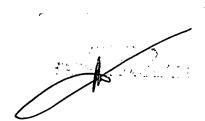   Maziere et al. (US 7164718 B2)

Contact

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Christopher Findley whose telephone number is (571)

270-1199. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax

phone number for the organization where this application or proceeding is assigned is

571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Findley/